

Virtual 3D STE(A)M Laboratory

Individual learning and collaboration in virtual 3D world

“Today our math teacher let us play this cool game, we walk together as play figures looking for treasures on an island. Then we come to a town and she asks us to find a shop. I wanted to buy a teddy bear but it was difficult to count the money! I tried three times and then I got it right! I wish we played the game every day! Math is my favourite at school!”

(a future 7-year-old to her parents)

Motivation of the learner

is crucially important for successful learning. The building of positive attitude towards STEM topics starts already in primary education. The web-based Virtual 3D STE(A)M Laboratory (aka Virtual Lab) learning environment enables teachers and learning content developers to **collaborate and share** cross the borders of the different STEM subjects. It makes it possible to analyse and **experiences natural phenomena as they are**: as fascinating objects for learning, for hobbies, and for **professional careers** of the future!



Individual learning progress

of each learner is monitored and analysed. The learning environment automatically optimizes and customizes itself to motivate the learner with **encouraging feedback** and sufficiently demanding exercises. The sophisticated learning analytics **detect possible special education needs at an early phase**, supporting teacher's own observations and decision making with data. Each learner experiences the Virtual Lab in his/her own customized way, earning **Badges** and populating personal learning histories in **Learning Passport**.

Technology enhanced learning

of 21st century. Virtual Lab is a **browser-based 3D** virtual world for collaborative and individual learning. Each user, student or teacher, is represented by **a virtual character** (avatar). Users are able to walk and communicate with each other via the avatars, chat, voice, and video. They can also easily manipulate objects and create content in the virtual worlds. Based on initial user evaluations, especially young learners find the interactive **colourful game-like** user interface extremely **motivating and fun**.

Multipurpose learning platform

for schools. Virtual Lab is a true **multipurpose tool for teachers**. In addition to being a platform for publishers' ready-made gamified learning content, it is a professional creation tool. With **the built-in Exercise generator**, teacher develops own **gamified curriculum and exercises** for phenomenal learning of Science, Technology, Engineering, Arts & design, and Mathematics. **Students themselves** can create exercises for each other sharing what they have learned and supporting their peers. Last but not least, Virtual Lab automates some of the time-consuming evaluation process and paperwork, **saving teacher's time** for the most valuable, for the personal guidance and support of the student.

Participatory development

of the Virtual 3D STE(A)M Laboratory is done **together** with the teachers and students of selected **European** primary and lower secondary **schools**. The Finpeda consortium (Adminotech Oy, IOAP Ltd, Finpeda Oy) works for the European Union pre-commercial procurement (PCP) project iMaile (iMaile.eu). Selected schools will start piloting the solution early 2017.



Link to the virtual 3D showroom of the Virtual Lab project. Use Google Chrome web browser and Google login:

➤ <https://goo.gl/3KKEB6>



“I use Virtual Lab on my biology lessons to teach about water circulation in nature. The Virtual lab opens totally new possibilities for teaching. I was amazed to see how focused and motivated the kids are during lessons!”

“Developing chemistry exercises for my students has never been this creative and fun. For the first time, my colleagues and I, we created cross-subject materials to teach the phenomenon of climate change for the 6th graders. You should have seen the presentations kids made during the course: Physics, biology, history, mathematics, economy; everything mixed up, but in a meaningful way! I recommend Virtual Lab to all schools, it’ll revolutionize your methods forever!”

“The evaluation of the kids used to be a nightmare, but now I get their tests ready checked and marked from the Virtual Lab tool. The system also analyses the learning of my students and provides me with lots of other useful information. For example, the dyscalculia of one of my students showed clearly in her learner profile, proving my own observations right!

(Imaginative comments of future users)